P2-D2 Working Group

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Action

Develop a process to identify stakeholder needs, identify NOAA's high-value products and professional development opportunities that meet those needs, and disseminate them through improved marketing and partnerships.

Task 1: Needs assessment

What:
Education/outreach materials and PD opportunities.

Who:
Formal, informal, and outreach/public engagement stakeholders.

Task 2: Identify/distribute high quality products

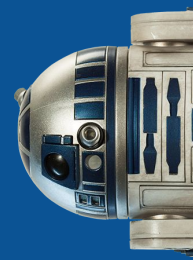
Identify characteristics of high quality products/PD.

Compile a selection of existing products/PD that meet these standards.

Distribute to selected stakeholders for incorporation into education activities.

Evaluate access to these products/opportunities.

Task 3: Develop best practices



Document selection criteria and best practices for products and professional development opportunities.

Request revision, development, and dissemination support from the Education Council in the future.

Progress to date - Task 1

Initial focus on formal educators and education products.

Conversations with state/local science supervisors (CA, DC, MD, VA, WA, WV).

Identified five key areas:

- The use of real time data
- Three-dimensional learning
- Modeling
- Engineering
- Teaching science at the elementary level

Progress to date - Task 2

Data call for NOAA products that meet one or more of the five identified criteria.

37 products submitted and reviewed by P2-D2 team.

18 products recommended for dissemination.

Created special collection on education.noaa.gov.

Developed promotional postcards for distribution.

Implementing NGSS?
NOAA resources can help you!

NOAA invests in education to foster an informed society that uses ocean, coastal, Great Lakes, weather, and climate science to make the best social, economic, and environmental decisions.

Educators have asked NOAA for help in finding resources that support the implementation of the new education standards. In response, a team of NOAA educators has established a curated collection of NOAA and partner education resources that emphasizes:

- The use of real time data
- Three-dimensional learning
- Modeling
- Engineering
- Teaching science at the elementary level

We are committed to the new vision for science education and will continue to develop resources to support educator needs.

http://www.education.noaa.gov/Special_Topics/NGSS/index.php

NOAA EDUCATION RESOURCES

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Resources to Help Implement NGSS

A curated collection of resources designed to support the implementation of new education standards.

Marine 2016 NOAA Calendars

Marine Endangered Species. Marine Debris.

2015 - 2035 NOAA Education Strategic Plan

We are pleased to announce the release of the 2015 – 2035 NOAA Education Strategic Plan.

FY15 Education Accomplishments Report

The Accomplishments Report highlights education achievements throughout NOAA in 2015.

Education Opportunities

- Educator Opportunities
- Student Opportunities
- Funding Opportunities
- Outreach Events/Conferences
- NSF GRIP NOAA Opportunities

Featured Education Resources

NOAA in Your Backyard

NOAA has hundreds of facilities and professional communicators across the nation. Get connected to NOAA guest speakers, field trips, and professional development in your area... Read More

Special Topics

El Niño

ENSO is one of the most important climatic phenomena on Earth. By influencing global temperatures and precipitation, which significantly

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Postings from the NOAA Education Resources website and other timely outreach information.

Data Visualizations

- Classroom Data Resources
- NOAA Data Visualization Lab
- NOAA View
- SOS Explorer

Home >> Special Topics >> NGSS

SHARE

Resources to Help Implement New Science Standards

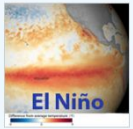
NOAA provides timely, reliable, and actionable information — based on sound science — to help the Nation make smart decisions that impact the future of society, the economy, and the environment. For this reason, NOAA invests in education to foster an informed society that uses ocean, coastal, Great Lakes, weather, and climate science to make the best social, economic, and environmental decisions.

Educators have asked NOAA for help in finding resources that support the implementation of the new education standards. In response, a team of NOAA educators has established a curated collection of NOAA and partner education resources that emphasizes:

- The use of real time data
- Three-dimensional learning
- Modeling
- Engineering
- Teaching science at the elementary level

On this page you will find a list of resources that meet at least one of these criteria. We are committed to the new vision for science education and will continue to develop resources that support educator needs and add them to this collection.

All | Elementary | Modeling | Students Use Scientific Data | Engineering



Data in the Classroom - El Niño

Students learn how to access and interpret sea surface temperature data, then how to identify and measure changes in temperature over time. Along the way, they will learn how these changes relate to other physical systems, specifically ocean circulation and the phenomenon of upwelling. Ultimately, students will examine these relationships with respect to biological systems, using data on chlorophyll as a measure of productivity. The goal is for students to become experienced with these kinds of data and the tools for accessing them, so that, by the end of the module, they can continue to explore data sets driven by their own inquiry. Modules are completely student-directed and can involve complex inquiry investigations which make use of historical and real-time NOAA data.

Website: http://dataintheclassroom.noaa.gov/SitePages/el-nino/index

PEs/DCIs: MS-ESS2-2, ESS2.A; MS-ESS2-6, ESS2.C; MS-LS2-4, LS2.C

Elementary: Grades 6-8, could be scaled down for upper elementary

Modeling: Students can use models to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems.

Engineering: No

Students Use Scientific Data: Yes

Type: Collection

Data in the Classroom - Water Quality

The activities are organized as a pathway with five levels of increasing sophistication. First, students need to understand how to access and interpret water quality data, and how to look for patterns and changes over time. Ultimately, they will examine the impacts of physical water quality factors on species that live in a given environment, using the Atlantic sturgeon as an example. The goal is for students to become experienced with these kinds of data and the tools for accessing them, so that, by the end of the module, they can continue to explore data sets driven by their own inquiry. Modules are completely student-directed and can involve complex inquiry investigations which make use of historical and real-time NOAA data.

Website: http://dataintheclassroom.noaa.gov/SitePages/water-quality/index

PEs/DCIs: MS-LS2-1, LS2.A

Elementary: Grades 6-8, could be scaled down for upper elementary.

Modeling: Students access and interpret water quality data, and look for patterns and changes over time.

Engineering: No

Students Use Scientific Data: Yes

Type: Collection

CLEAN Collection

The CLEAN Collection is a collection of high-quality digital educational resources, including learning activities, visualizations, videos, and short demonstrations/experiments, that addresses climate and energy literacy and NGSS. Each free digital resource undergoes a rigorous review by multiple practicing educators and climate and energy scientists. Resources are annotated with reviewers' comments and aligned with: a) the AAAS Project 2061 Benchmarks for Science Literacy; b) the Next Generation Science Standards; and c) the NAAEE Excellence in Environmental Education Guidelines for Learning. NOAA partnered with the Climate Literacy and Energy Awareness Network (CLEAN) to use the Climate and Energy Literacy guides to identify and integrate effective resources across different educational levels. The CLEAN framework for vetting, reviewing, and assuring scientific quality of climate and global change education materials on climate, energy and related topics will be very useful to teachers and educational systems across the nation.

Website: http://cleanet.org/clean/literacy/ngss.html

PEs/DCIs: Supports 24 MS and 34 HS NGSS PEs and all science disciplines.

Elementary: 34 reviewed climate and energy resources for grades 3-5.

Modeling: 61 resources that relate to measuring and modeling climate.

Engineering: 73 HS related resources, 22 MS related resources.

Students Use Scientific Data: 113 reviewed resources that are tagged with "Students Use Scientific Datasets."

Type: Partner collection

The GLOBE Program

Since 1995, The Global Learning and Observation to Benefit the Environment (GLOBE) (http://www.globe.gov/) program has provided K-12 students opportunities to carry out inquiry-based science learning. GLOBE is currently working with educators and GLOBE Partners in the United States to develop and finalize documents that outline pathways for teachers to implement the Next Generation Science Standards (NGSS) Framework. The GLOBE Teacher's Guide and website (www.globe.gov) provide access to protocols, learning activities, data sheets, field guides and associated data, for five scientific investigation areas: atmosphere, Earth as a system, hydrology, land cover/biology and soil. GLOBE is jointly sponsored by NASA and NSF, with support from NOAA and State Department.

Website: https://www.globe.gov/documents/2629866/0/ConnectionsGLOBE_NGSS.pdf

PEs/DCIs: Supports 12 ES, 8 MS and 9 HS NGSS PEs and all science disciplines.

Elementary: GLOBE science-based storybooks, classroom learning activities, and investigation protocols for grades K-5.

Modeling: GLOBE science investigations and associated learning activities for grades K-12 support the NGSS Practices integrated into the GLOBE Program Model for Student Scientific Research with a focus on the modeling concept.

Engineering: The GLOBE protocols, learning activities and investigations richly support engineering, technology, and applications of science for grades K-12.

Students Use Scientific Data: Classroom implementation of GLOBE engages students in the development of scientific investigations using GLOBE protocols to collect data and GLOBE activities to develop scientific concepts important to making sense of the data.

Type: Partner Collection

Winged Ambassador: Ocean Literacy through the Eyes of Albatross

The classroom activity package Winged Ambassadors – Ocean Literacy through the Eyes of Albatross is available free online courtesy of NOAA, Oikonos, and other partners. Albatrosses, charismatic and threatened seabirds, are ambassadors for a clean ocean because they traverse vast oceanic regions searching for floating food. Along their journeys, they ingest plastic trash and feed it to their chicks. These five lessons comprise new and modified activities, using inquiry-based science instruction, aligned to new standards for grades 6-8 with extensions for grades 9-12.

Website: http://www.downloadwingedambassadors.org/

PEs/DCIs: MS-LS1-4, LS1.B, LS1.C; MS-LS2-1, LS2.A; PS3.D

Elementary: Grades 6-8 but some aspects could be adapted for younger grades.

Modeling: No

Engineering: No

Students Use Scientific Data: Students will use real data from current research tracking albatross migrations and ocean plastic pollution.

Type: Curriculum

Next steps

Message to CSSS members asking for feedback.

Reconvene working group to determine future emphasis:

- “Distribute to selected stakeholders for incorporation into education activities.”
- Efforts for informal and outreach?
- Recommendations for strengthening existing products.

Meeting to review NGSS discussions at recent NSTA conference (May 6, 1-2:30 pm, SSMC4, 9415).